



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/614,190 Confirmation No. 6338
Applicant : Y. TAKAMOTO et al.
Filed : July 8, 2003
Title : NETWORK STORAGE SYSTEM
TC/AU : 2157
Examiner : ARIO ETIENNE
Docket No. : H-1105
Customer No.: 24956

PETITION TO MAKE SPECIAL
(ACCELERATED EXAMINATION UNDER 37 CFR §1.102(d))

MAIL STOP: PETITION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

December 13, 2005

Sir:

The Applicants petition the Commissioner to make the above-identified application special in accordance with 37 CFR §1.102(d). In support of this Petition, pursuant to MPEP § 708.02(VIII), Applicants state the following.

(A) REQUIRED FEE

This Petition is accompanied by the fee set forth in 37 CFR § 1.117(h).

Payment of the fee has been made in the manner set forth below in Section (G).

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130.00 OP

(B) ALL CLAIMS ARE DIRECTED TO A SINGLE INVENTION

Following the Preliminary Amendment filed on the same date as this paper, claims 1-15 are pending in the application. All the pending claims of the application are directed to a single invention. If the Office determines that all claims in the application are not directed to a single invention, Applicant will make election without traverse as a prerequisite to the grant of special status in conformity with established telephone restriction practice.

As set forth in independent claims 1, 11 and 12, the invention is generally directed to a network storage system having a client management device. Under claim 1, the invention is a network storage system for supplying a storage to a plurality of clients through a network; wherein said system includes: a first device provided with a disk device; and a second device for managing a connection to said plurality of clients; wherein said first device allocates an area of said disk device to said second device; wherein said second device allocates a portion of said area allocated from said first device to each of said plurality of clients; and wherein said second device is provided with means for translating a source network address to a specific network address to be transferred to said first device even when receiving a request from any one of a plurality of network addresses denoting said plurality of clients.

Additionally, under independent claim 11, the invention is a network storage system connected to a network to which a plurality of clients are connected, said system comprising: a network file device for managing a plurality of disk devices; and

a client management device for relaying an access request issued from a client to a disk device and translating said client address to its address to access said disk device, wherein said network file device allocates areas of said disk devices to said client management device, and wherein said client management device allocates a portion of said area allocated from said network file device to each of said plurality of clients.

Furthermore, under independent claim 12, the invention is a network storage system connected to a network to which a plurality of clients are connected, said system comprising: a network file device for managing a plurality of disk devices; and a client management device for relaying an access request issued from a client to a disk device; wherein said network file device allocates a predetermined area of each of said plurality of disk devices to said client management device; and wherein said client management device divides said predetermined area allocated by the network file device, and allocates portions of said predetermined area to said plurality of clients.

(C) PRE-EXAMINATION SEARCH

A pre-examination search has been conducted, directed to the invention as claimed. The pre-examination search was conducted in the following US Manual of Classification areas:

<u>Class</u>	<u>Subclass</u>
707	1, 10
709	215, 223, 226

Additionally, a key word search was performed on the USPTO full-text database including published U.S. patent applications.

(D) REFERENCES DEEMED MOST-CLOSELY RELATED TO THE SUBJECT MATTER ENCOMPASSED BY THE CLAIMS

Based upon a review of the documents located by the search and the documents already of record in the application, the references deemed to be most-closely related to the subject matter encompassed by the claims are listed below.

<u>Document No.</u>	<u>Inventor</u>
US 20030229690	Kitani et al
US 20040010562	Itonaga
US 20040078467	Grosner et al
US 20050071560	Bolik

Copies of the above cited references are enclosed.

(E) DETAILED DISCUSSION OF THE REFERENCES

Following a brief discussion of features of the invention in Section (E)(1) below, the references deemed most-closely related are discussed in Section (E)(2) below, pointing out, with the particularity required by 37 CFR 1.111 (b) and (c), how the claimed subject matter is patentable over the teachings of these documents.

(1) It is Submitted that the Present Invention is Patentable Over the References for the Following Reasons

The present invention provides a network storage system that is connected to a network to which a plurality of clients are connected. The network storage system includes a network file device for managing a plurality of disk devices and a client management device for allocating a storage area, and relaying access requests from the clients to the disk devices by translating addresses of the clients to its own addresses so as to enable accesses to the disk devices. Consequently, a plurality of clients appear as one client group from each disk device, so that the system can omit a process for setting data and privileges for each client individually.

It is submitted that the cited references, whether taken individually or in combination with each other, fail to teach or suggest the invention as claimed. In particular, the cited references, at a minimum, fail to teach or suggest, as recited in the claims:

a first feature of the present invention, as recited in independent claim 1, comprising a network storage system wherein a first device allocates an area of a disk device to a second device and the second device allocates a portion of the area allocated from the first device to each of a plurality of clients;

a second feature of the present invention, as recited in independent claim 11, comprising a network storage system wherein a network file device allocates areas of disk devices to a client management device, and the client management device

allocates a portion of the area allocated from said network file device to each of a plurality of clients; and

a third feature of the present invention, as recited in independent claim 12, comprising a network storage system wherein a network file device allocates a predetermined area of each of a plurality of disk devices to a client management device, and the client management device allocates portions of the predetermined area to a plurality of clients.

2. Discussion of the References Deemed to be Most-Closely Related

The patent application publication to Kitani et al., US 20030229690, provides for a secure storage system. Disclosed is a network 50 that includes clients 21 and 22, a management apparatus 23, conversion apparatuses 24 and 25, and storage devices 26 and 27. A VPN is provided between the clients 21, 22 and the conversion apparatus 24, and between the conversion apparatus 24 and the conversion apparatus 25. Management apparatus 23 manages conversion apparatuses 24 and 25, storage devices 26 and 27, and clients 21 and 22. The conversion apparatus 24 connects with the clients 21 and 22, the storage device 26, and the conversion apparatus 25. The conversion apparatus 25 connects with the conversion apparatus 24, a management apparatus 23, and a storage device 27. Management apparatus 23 allocates virtual volumes of storage devices 26 and 27 to clients 21 and 22. After authenticating a client, the management apparatus specifies a VPN having a VPN-ID and also manages the specified VPN information. Thus, a

VPN is provided between the client and the conversion apparatus but is not provided for the storage device. A SAN is provided between the conversion apparatus and the storage device but cannot directly communicate with a client connected to the LAN/MAN/WAN. Accordingly, the conversion apparatus must always be used for communication with the client. The conversion apparatus rejects access to the storage device from a client whose conversion apparatus is not provided with the VPN-ID, ensuring the security from the conversion apparatus to the storage side. Further, since the VPN-ID is used to provide a mapping means between the VPN and the storage access range, it is possible to not only limit accesses to the storage device, but also manage the storage access range. Consequently, it is possible to increase the number of volumes allocated to the client compared to the volume monitoring restricted by the number of ports in the SAN. (See, e.g., Figures 1 and 8; and paragraphs 51, 52, 54, 70 and 125-126.)

Thus, Kitani et al. fail to show a second device that allocates a portion of a disk area allocated to it. More particularly, Kitani et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 11, or the above-described third feature of the present invention, as recited in independent claim 12.

The patent application publication to Itonaga, US 20040010562, includes a common network 50 that has a shared cache server 100 which provides a virtual

private network VPN to groups that can include clients. Shared cache server 100 includes a cache function section 110 which is able to perform a search for contents in a storage device 120, extract contents from storage device 120, or store contents into storage device 120. An address converting function section 131 of shared cache server 100 has a function obtained by extending a network address translator function and converts an IP address being used on a side of common network 50 to an IP address corresponding to each group and being used by cache function section 110 and vice versa. A storage capacity managing function section 134 of shared cache server 100 manages partitioned capacity being allocated to each group in storage device 120, and capacity being used in each group using a table. (See, e.g., Figures 1 and 2; and paragraphs 33, 36, 37 and 38.)

Thus, Itonaga fails to show or suggest a second device that allocates a portion of disk area allocated by a first device. More particularly, Itonaga does not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 11, or the above-described third feature of the present invention, as recited in independent claim 12.

The patent application publication to Grosner et al., US 20040078467, shows a switch system 100 which is operable to interconnect clients and storage. Storage processor (SP) elements 104 connect to storage and IP processor elements 102 connect to clients. High speed switch fabric 106 interconnects the IP and SP

elements under the control of control elements 103. SP elements 104 support volume management and NAS (NFS/CIFS) mediation, and IP elements 102 provide load balancing. Network address translation translates from one IP address to another IP address for purposes such as load balancing. The virtual domain IP address is translated at a "Pirus" device in the virtual storage domain to the NFS/CIFS server's IP address. Depending on the server chosen, the IP address is translated to the terminating server IP address. (See, e.g., Figures 1 and 15; and paragraphs 78, 79, 184 and 185.)

Accordingly, Grosner et al. fail to teach that a second device allocates portions of an area of a disk device that was allocated by a first device. More particularly, Grosner et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 11, or the above-described third feature of the present invention, as recited in independent claim 12.

The patent application publication to Bolik, US 20050071560, provides for an autonomic block-level hierarchical storage management for storage networks. Client systems 100-110 are connected to a storage virtualization system (SVS) 130 via a storage network 135. SVS 130 is connected to three physical storage devices 115-125 via storage network 135. Each of client systems 100-110 is unaware of the existence of physical storage devices 115-125. Client systems 100-110 operate with

corresponding virtual volumes 300 presented by SVS 130. A core component of SVS 130 is a block-mapping table (BMT) 400. BMT 400 translates each virtual block address issued by client systems 100-110 to a corresponding physical block address. For example, a block 0 of virtual volume A may be mapped to a physical volume 1, block 512. Hierarchical storage management (HSM) software of client systems 100-110 can be centralized in a special HSM controller. See, e.g., Figures 2, 3 and 4; and paragraphs 29, 31, 32, 33 and 35.)

Thus, Bolik fails to teach that a second device allocates portions of an area of a disk device. More particularly, Bolik does not teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 11, or the above-described third feature of the present invention, as recited in independent claim 12.

(F) CONCLUSION

Therefore, since the cited references, at a minimum, fail to teach or suggest the above-described first feature of the present invention, as recited in independent claim 1, the above-described second feature of the present invention, as recited in independent claim 11, or the above-described third feature of the present invention, as recited in independent claim 12, it is submitted that all of the claims are patentable over the cited references, whether the references are taken individually or in combination with each other.

Applicants have conducted what they believe to be a reasonable search, but make no representation that "better" or more relevant prior art does not exist. The United States Patent and Trademark Office is urged to conduct its own complete search of the prior art, and to thoroughly examine this application in view of the prior art cited herein and any other prior art that the United States Patent and Trademark Office may locate in its own independent search. Further, while Applicants have identified in good faith certain portions of each of the references listed herein in order to provide the requisite detailed discussion of how the claimed subject matter is patentable over the references, the United States Patent and Trademark Office should not limit its review to the identified portions but rather, is urged to review and consider the entirety of each reference, and not to rely solely on the identified portions when examining this application.

In view of the foregoing, Applicants request that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

(G) FEE PAYMENT (37 C.F.R. 1.17(h))

The fee required by 37 C.F.R. § 1.17(h) is to be paid by:

☒ the Credit Card Payment Form (attached) for \$130.00.

☐ charging Deposit Account 50-1417 the sum of \$130.00.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417. A duplicate of this petition is attached.

Respectfully submitted,



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